

# A Note on Nagaland

BY

P. D. STRACEY I.F.S. (Retd.)

Nagaland has an area of some six thousand square miles with a population of about four lakhs. It is almost entirely a hilly area with only small patches of flat land, in the plains bordering Assam. The country has an axis approximating to north-east south-west, but the hills themselves have a general north-south grain, with drainage both into the Assam valley and the Chindwin valley of Burma, and to some extent into the Manipur basin. The elevation of the hills increases towards the east and the highest range is found on the border of Burma, Mt. Saramati, almost twelve thousand feet high. In the centre of Naga Hills there is a concentration of high peaks in the Barail Range, overlooking the main Dimapur-Kohima-Imphal road and drained by the Barak River. The Barak flows south into Manipur, whence, after a sharp 180 degrees turn into the Cachar District of Assam, where it is known as the Surma, it flows into East Pakistan to join the Brahmaputra river system. The northern face of the Barail Range gives rise to a number of small and shorter streams which flow into the main Assam valley of the Brahmaputra.

Climatologically the Naga Hills are a monsoon belt with one pronounced 'rain shadow' area to the north, at the point where these hills join the main Cachar-Khasi-Mikir hills massif. In this rain shadow area, which embraces the foothills and plains around Dimapur (or Manipur Road of wartime fame) and through which the railway line to Upper Assam runs, the rainfall is as low as 60 in., whereas on the Burma border and on the slopes of the Barail Range the rainfall is much heavier and goes up to 120 in.

From the vegetational aspect the Naga Hills are more interesting than the Khasi Hills, because of the change in forest types which takes place as one proceeds up the valley of the Brahmaputra. The forests on the neck of the hill range dividing the Brahmaputra and Surma valleys, consist first of a 'dry' evergreen belt containing the locally noted *Bonsum* (a species of *Phoebe*), and further eastward a 'moist' type characterised by the giant Dipterocarp *Hollong*, sister to the *Gurjan* of the Andamans so well known to the timber trade of

Calcutta. This *Hollong* forests extends along the foothills of the Naga country up to the tip of the valley, near the point where the Burma-China-India triangle begins. The main associate of *Hollong*, *Makaí* (*Shorea assamica*), extends to elevations around 3000 ft. On the other side of the dividing mountains, in Burma, teak commences. Teak is not found within Nagaland proper, although it occurs in adjoining Manipur on the slopes going down into the Chindwin drainage. The strip of country between 2000 ft. and 5000 ft. generally is the main habitated and cultivated portion of Nagaland. In the interior of the Naga Hills at elevations above 3000 ft., the Dipterocarps give way to a peculiar type of evergreen forest which deserves the name 'temperate' evergreens, as they are found on the higher and cooler elevations. This forest type consists of a number of interesting species belonging to families such as Micheliaceae, Magnoliaceae, and Lauraceae and also a species of *Phoebe*. In addition, the genera *Elaeocarpus*, *Castanopsis* and *Quercus* are represented, the first named at higher elevations, the second in the moister localities and valleys, and the last favouring the more open and drier slopes adjoining cultivation. Cane is generally absent at the higher sites, as also the characteristic palm, *Pinanga gracilis*, of the lower evergreens.

Generally speaking the forests of Nagaland may be classified as 'relict' forests, since they are survivors of what was originally a great forested area which has been subjected to *jhuming* or shifting cultivation for hundreds of years. This feature is not exclusive to these hills, but is common to all the hill ranges on the southern bank of the Brahmaputra which have been the home of tribal races whose way of life is connected with *jhuming* from time immemorial. The remnants of the forests are to be found mainly on the tops of the hills and in the bottom of the deep, ravine-like valleys of the streams which drain from them. Everywhere else the vegetation has been changed by the axe and fire. Only where it is not possible to grow rice or millets because of increasing elevation, has the forest been left alone. These forested caps of the mountains are clearly visible when flying over Nagaland and constitute a unique feature of an otherwise rather monotonous expanse of secondary jungle. But the scene is not as monotonous as the one presented by the Lushai, or Mizo Hills as they are now known, where the secondary vegetation consists entirely of bamboo. The Reserved Forests of Nagaland comprise 127 square miles and the Protected Forests some 200 square miles only.

The *jhum* cycle in these eastern hills has been gradually tightening, until it is down to three to five years in the worst places while it is about eight to ten years in the best. The average length of the *jhum*

cycle in the Naga Hills is ten years. This shortening of the *jhum* cycle has been brought about by a combination of factors, of which the most important are the decreasing soil fertility, as the result of progressive loss of top soil with each felling and burning and the consequent decline in crop productivity on the one hand, and the steadily increasing population, as the result of improved health and sanitation resulting in decreased mortality and greater longevity, on the other. To those who have not seen a *jhum* plot in its various stages in the hills of north-eastern India it is impossible to visualise the drastic erosion of soil which takes place each time the land is cut over, burned and exposed. The coincidence of the *jhuming* season—February to April—with the onset of the early showers of rain which characterise the pre-monsoon period in the Assam region, results in the soil being freshly exposed to the erosive action of the rain before the crop that is sown or other vegetation can cover it. The result is rivulets of reddish or brownish soil flowing down the steep slopes and taking away at one stroke the valuable top soil, which in this case has had only a few years to build up. The only compensation is the ash produced from the burning of the trees and vegetation, which is the sole reason for any crop being possible at all. No fertiliser is applied, nor is any attempt made to hold up the soil except in rough and ready attempts at bunding by laying the unburnt trees and branches across the slope. This, however, is a feature in certain parts of Nagaland only. Elsewhere the tribal has been content to wrest what he can from his land while watching helplessly the removal of its most valuable component, the top soil.

In the period intervening between two successive cultivations, grasses first come up, and in some areas an impoverished form of bamboo. Where the period is long enough, as is the case in NEFA and Nagaland, trees begin to invade and take over the grass-covered land. Such species as have seed dispersal by wind colonise the place *en masse*. But before the process has had time to result in even a partial restoration of the tree growth, the *jhum* cultivator comes round with his *dao* and cuts and burns the vegetation for his next crop! And so the process of destruction goes on, until all that can survive on the meagre soil and after repeated cuttings and burnings is an undergrowth of fire-hardy species of reeds and grasses, such as *Imperata* (thatch) and *Saccharum* species in the lower elevations, *Neuradia* (ekra) and *Thysanoleurum* (broom) in the higher elevations and straggling weeds, a common plant being *Eupatorium odoratum*, with a few trees resulting from coppice shoots and pollarded stems, and here and there a young tree of seedling origin.

In this 'desert' of vegetation, figuratively speaking, hardly any animal life can be found. A few ground animals such as lizards, porcupines and mongooses, minor predators and where the vegetation is more favourable deer and pig, with an occasional tiger or leopard. Elephants, though greatly reduced, are found in the valleys of the foothills. Birds are to be found, some rare and interesting, in the forested areas although over large stretches of the country the song of birds is not to be heard. The Naga is an avid eater of meat and kills and eats anything he can find. He has practically exterminated the fauna in certain valleys, and although he does not indulge in the ritual hunts of the central Indian tribal people, he is continuously on the look-out for an opportunity to secure meat. Strangely enough he has no use for the tiger, of which he wants neither the meat nor the skin. A couple of years ago a family of five tigers which were unlucky enough to stray to the vicinity of Mokokchung, were eliminated in a well organised hunt but their carcasses were stretched out on bamboo frames and allowed to rot at the entrance of the village of Ungma, the parent village of the Ao Nagas.

The primitive form of land-use in India known as shifting cultivation, which extends into Burma and the mountain country farther east on the one side, and into the central Indian plateau on the other, has been carried on over a long period of time with very little being done to remedy this state of affairs. All authorities who have come in touch with the problem agree that it represents a future that is dark and full of despair for the people of the hills. 'Eliminate *jhuming*' has been the cry, but no answer is given to the practical question of how to replace it. 'Terrace cultivation' is little more than a slogan to a people who have not got the time and the energy to convert the mountain slopes to terraces for permanent cultivation. *Jhuming* is one of the most arduous forms of cultivation imaginable and the *jhum* cultivator has to work for nearly 365 days in the year and 12 hours a day to eke out a bare pittance from his land. The never ending cycle of cultivating a current *jhum* and with it preparing for the next year's *jhum* is interspersed only by labour on building and repairing houses, fetching firewood for the family etc. An occasional hunting trip or festival, when drinking and sports take over, brighten the otherwise monotonous life of the *jhum* cultivator. Where is the time and the energy for the laborious carving out of terraces from the hill-sides? Even if the government were to subsidise such form of cultivation the expenditure would be prohibitive, while the manpower requirements would be such as could not be met. The use of bulldozers to cut terraces out of the hill-side has only limited application, and only where

the slope is not excessive. In many cases perennial irrigation is not available and the terraces have to depend on rain water. The growing of cash crops, which has been recommended as a 'cure all' has also certain limitations. In the Mizo Hills vast quantities of oranges are produced but have no value because there is no market. The theory of exchange between the plains and the hills, the farmer sending his surplus rice up and the latter sending down his cash crops, is no doubt one of the answers to the problem, but it would necessitate a complete change of outlook on the part of the conservative hillman and involve a network of roads which would be beyond the reach of even a modern welfare State.

Improved methods of *jhuming* are part of the programme of the agricultural authorities in these eastern hills, but so far it has been more a theory than anything else. In fact, the whole problem appears to be incapable of solution particularly if the individual villagers' predilection for the ancestral site is considered. In Orissa, Mooney, an officer of the Indian Forest Service, succeeded in bringing down certain groups of hill dwellers who were practising shifting cultivation to the foot of the hills, where ready made townships, complete with all facilities such as medical aid and hygiene, sanitation, water etc. and prepared permanent cultivation lands were ready for them. This uniquely successful experiment resulted in the abandoned *jhuming* land being given over to forest. But in the case of tribal peoples whose preference is for the mountain top--and in the case of Naga the tip of the top—this is a difficult solution to envisage even if there was sufficient flat land anywhere for permanent cultivation and consolidated settlements.

But there can be a new approach to this problem in view of the threat of diminishing wood supplies in India. While we hear a lot about fast growing plantations to produce industrial material for paper and pulp, hardboards, chipboards etc., and while every State is going in for afforestation with fast growing species like Eucalyptus, in many cases abandoning the growing of large sized trees on long rotations for small sized trees suitable for the production of industrial pulping material, the hills surrounding the Brahmaputra valley are producing in numerous plots, scattered over the whole length of the hills enormous quantities of cellulosic raw materials suitable for this type of industrialisation. Instead of trying to find land for these afforestation programmes in reserved forests which are already heavily burdened with demands for timber, firewood etc., we could utilise the material growing in these hills. By harvesting a part of the material which is burned—for not all the vegetation is reduced to ash nor is the whole

of the tree needed for production of this type of natural fertiliser—this vast and readily available self-renewing, raw material resource can be tapped. In the middle of the *jhum* cycle say in the 5th year of the 10 year period (including the two years of cultivation), the coppicing grasses, reeds and fast growing species that have come up can be harvested once without any great diminution of the cellulosic material available for burning. After paying the cultivator a fair price for what is removed from his land the material can be taken to factories producing hardboards, chipboards and pulp situated in the plains within reasonable distance, say 20 to 25 miles, from railhead. In Nagaland where nearly one-third of the land area of 6000 square miles is under shifting cultivation, the possibilities for this are enormous. Even allowing for eventual 'stabilisation' of some of the *jhum* lands by terracing, growing of cash crops and afforestation, we can safely count on some 150 square miles (96,000 acres, say 100,000 acres) of such lands within easy reach of the railway—a strip of land 150 miles in length and 10 miles in depth—for production of cellulosic pulping materials. Allowing for one-tenth of this area being under cropping i.e., cutting and burning each year on a 10 year cycle, and on the basis of as low a figure as 5 tons of material per acre, we may expect 50,000 tons of such material per annum, sufficient for a hardboard plant of 100 ton capacity.

Application of this principle to other hill areas would mean that in a strip of hills surrounding the main Assam valley, the vegetation that comes up on the *jhum* plots can contribute to the establishment of a vast wood-products industry which can feed India with all the chipboard, hardboard and pulp and paper that it needs. It would mean the establishment of such industries in areas which are very poorly developed, while the tribal cultivator will earn money from his land and will be enabled thereby to improve his economic standard and way of life. He may even be able to finance the conversion of a portion of his land into terraces for permanent cultivation, thereby ensuring his future. Where the *jhum* cycle is long enough—say 10 to 12 years—the tribal cultivator could be induced, by a system of subsidies if necessary, to grow fast growing, coppicing species at suitable spacing (15' to 20') along with his cereal crops to supplement the vegetation which comes up in the inter-crop period, thereby establishing a self-renewing crop of wood for industrial utilisation. This is nothing but an adaptation of the *taungya* system of growing plantations with the aid of field crops, so well known to the forester in India.

This new solution for a chronic problem will serve three requirements: first, the need for amelioration of the system of *jhuming* by

bringing about an increased return from the land, (as indicated in the last mentioned suggestion) because growing of trees instead of bamboos, grasses and reeds, will have a long term effect on the cycle through the provision of more ash from a *wood* burn as such; next, improving the economic status of the tribal cultivator, who has nothing to look forward to except poor crops won from the land by hard effort; and finally producing industrial material for India's needs. Such a solution is offered as a challenge, both to the hide-bound administrator and the conservative tribesman. Will it be taken up?